

## **ABSTRACT**

### **Title: The Simulation and Assimilation of Doppler Wind Lidar Observations in Support of Future Instruments**

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With the launch of the European Space Agency's Atmospheric Dynamics Mission (ADM-Aeolus) in 2011 and the call for the 3D-Winds mission in National Research Council's decadal survey, direct spaceborne measurements of vertical wind profiles are imminent via Doppler wind lidar technology. Part of the preparedness for such missions is the development of the proper data assimilation methodology for handling such observations. Since no heritage measurements exist in space, the Joint Observing System Simulation Experiment (Joint OSSE) framework is being utilized to generate a realistic proxy dataset as a precursor to flight. These data are being used for the development of the Gridpoint Statistical Interpolation (GSI) data assimilation system utilized at a number of centers through the United States including the Global Modeling and Assimilation Office (GMAO) at NASA/Goddard Space Flight Center and at the National Centers for Environmental Prediction (NOAA/NWS/NCEP). This effort will be presented, including the methodology of proxy data generation, the handling of line-of-sight wind measurements within the GSI, and the impact on both analyses and forecasts with the addition of the new data type.